1. (Twice Amended) A terminal-to-terminal communication control method with employment of an IP transfer network, wherein:

an IP transfer network contains two, or more connection servers, and a media router outside said IP transfer network is connected to a terminal having a transmittance/reception function of digital media;

a call setting IP packet is transmitted from said media router to the connection servers;

said connection server provided on the telephone calling side determines both a communication line for an inter-terminal communication within said IP transfer network and a line number for identifying said communication line by employing both a telephone number provided on the telephone calling side and a telephone number provided on the call reception side, and produces an initial address message containing said line number;

said produced initial address message is transmitted to the connection server provided on the call reception side, said connection server on the call reception side transmits a call setting IP packet to the media router on the call reception side, and said media router on the call reception side transmits said call setting IP packet to the terminal on the call reception side;

said connection server on the call reception side produces an address completion;

said address completion message and transmits said received address completion message is transmitted to said connection server on the telephone calling side;

when a report of telephone calling operation is received from the terminal on the call reception side, said connection server on the call reception side produces a call pass message; said call pass message reaches to said connection server on the telephone calling side; and said connection server on the calling side transmits the report of telephone calling operation of the terminal on the call reception side to the media router on the telephone calling side;

upon receipt of a response issued from the terminal on the call reception side, said connection server on the call reception side produces a response message; said response message reaches to said connection server on the telephone calling side; said connection server on the telephone calling side stops the calling sound of the terminal on the call reception side; both said terminal on the telephone calling side and said terminal on the call reception side can establish an

inter-terminal communication between the terminals to transmit/receive the digital media via said media routers provided on the telephone calling side and the call reception side;

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a request for interrupting the inter-terminal communication is transmitted from said media router provided on either the telephone calling side or the call reception side to said connection server; a release request is sent from said connection server to another connection server; an interrupt instruction is transmitted from said another connection server to another media router, and on the other hand, a release completion is transmitted from another connection server to said server; and an interrupt completion is sent to a media router so as to connect/release the inter-terminal communication between the two terminals.

186. (New) An IP communication system, wherein:

an IP transfer network contains two or more server;

said server connects to a destination connection server via a line;

said server communicates with said destination server by transmitting /receiving an IP packet; and

said server carries out a terminal-to-terminal communication connection control by transmitting/ receiving said IP packet including call control data of No.7 common channel signaling system based on a terminal -to-terminal communication connection control method of the No.7 common channel signaling system.

187. (New) An IP communication system, wherein:

an IP transfer network contains two or more network node apparatus and servers;

said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network;

said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet;

said network node apparatus connect to one or more media router;

said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet;

said network node apparatus and said servers communicate with said destination network, node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and

said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/ receiving said internal IP packet including call control data of H323 system based on a terminal-to-terminal communication connection control method of the H323 common channel signaling system.

188. (New) An IP communication system, wherein:

an IP transfer network contains two or more network node apparatus and servers;

said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network;

said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet;

said network node apparatus connect to one or more media router;

said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet;

said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and

said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting /receiving said internal IP packet including call control data of SIP system based on a terminal-to-terminal communication connection control method of the SIP common channel signaling system.

189. (New) An IP communication system, wherein:

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line; said network node apparatus include an IP address of a terminal connected to a media router; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving an IP packet; and said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said IP packet; and

said IP transfer network carries out a terminal-to-terminal communication connection

control by transmitting/receiving said IP packet including call control data of No.7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system.

190. (New) An IP communication system, wherein:

an IP transfer network contains two or more network node apparatus and servers;

said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network;

said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet;

said network node apparatus connect to one or more media router;

said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet;

said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and

said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system.

191. (New) An IP communication system according to Claim 190, wherein: said connection server carries out a terminal-to-terminal communication connection control by transmitting/ receiving said IP packet including call control data of SIP system based on a terminal-to-terminal communication connection control method of the SIP system.

192. (New) An IP communication system according to Claim 186, wherein an address complete

message is omitted.

193. (New) An IP communication system according to Claim 186, wherein said media router transmits/receives an IP packet including call control data to/from said server via said network node apparatus.

194. (New) An IP communication system according to Claim 186, wherein said media router transmits/receives an IP packet including digital voice data to/from said network node apparatus.

195. (New) An IP communication system according to Claim 186, wherein said media router transmits/receives an IP packet including call control data of UNI system to/from said server based on communication connection control method of the UNI system.

196. (New) An IP communication system according to Claim 186, wherein said media router transmits/receives an IP packet including call control data of H323 system to/from said server based on communication connection control method of the H323 system.

197. (New) An IP communication system according to Claim 186, wherein said media router transmits/receives an IP packet including call control data of SIP system to/from said server based on communication connection control method of the SIP system.

198. (New) An IP communication system according to Claim 186, wherein a terminal transmits/receives an IP packet including call control data of SIP system to/from said server via said media router and said network node apparatus based on communication connection control method of the SIP system.

199. (New) An IP communication system according to Claim 186, wherein said IP transfer network can transmit/receive an IP packet including digital media between terminals when said IP

transfer network makes a terminal-to-terminal communication connection control to a call phase.

200. (New) An IP communication system according to Claim 186, wherein when said IP transfer network makes a terminal-to-terminal communication connection control to a call phase, said IP transfer network can transmit /receive an IP packet including digital media between terminals by using a communication line for terminal-to-terminal communication connection control specified by circuit identification code.

201. (New) An IP communication system according to Claim 199, wherein said digital media is digitalized voice and a media communication is a voice communication of telephone.

202. (New) An IP communication system according to Claim 199, wherein said digital media includes at least one among character, digitalized still image, digitalized animation, digitalized voice and digitalized data and a media communication is an IP data communication.

203. (New) An IP communication system according to Claim 199, wherein said digital media is digitalized animation and a media communication is a voice animation communication.

204. (New) An IP communication system according to Claim 186, wherein a telephone number is a terminal discriminating number for discriminating a communication destination terminal.

205. (New) An IP communication system according to Claim 186, wherein an IP address is used for discriminating a communication destination terminal.

206. (New) An IP communication system according to Claim 186, wherein an operation management server collects communication records including line number, communication time, telephone number.

207. (New) An IP communication system according to Claim 186, wherein said IP communication system includes a server to answer an IP address against a questioned telephone number.

208. (New) An IP communication system according to Claim 186, wherein said IP communication -system carries out a telephone connection phase by transmitting a call setting IP packet including at least an origin telephone number and a destination telephone number from a terminal

209. (New) An IP communication system according to Claim 186, wherein said IP transfer network converts a telephone number into an address of IP packet.

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210. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving an IP-packet including a digitalized voice data.

211. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving an IP packet including a telephone number.

212. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving an IP packet including a circuit identification code.

213. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting /receiving an IP packet including a call control data.

214. (New) An IP communication system according to Claim 186, wherein said IP transfer network records information including a telephone number and a circuit identification code when said IP transfer network carries out a terminal-to-terminal communication connection control.

215. (New) An IP communication system according to Claim 186, wherein a terminal identification number at a time when said IP transfer network carries out a terminal-to-terminal communication connection control is a telephone number.

216. (New) An IP communication system according to Claim 186, wherein a terminal identification number at a time when said IP transfer network carries out a terminal-to-terminal communication connection control is an IP address.

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217. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a relay signaling point of No.7 common channel signaling system.

218. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a relay signaling point of No. 7 common channel signaling system, and said IP transfer network carries out a communication connection control of terminals between a terminal connected to said IP transfer network and a terminal connected to one or more public switched telephone network based on a communication connection control method of the No.7 common channel signaling system.

219. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a relay signaling point of No. 7 common channel signaling system, and said IP transfer network exchanges a public switched telephone network for signaling information.

220. (New) An IP communication system according to Claim 186, wherein a gateway contains one or more NNI interface, and said IP transfer network connects to one or more public switched telephone network via said gateway.

221. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a relay signaling point of No. 7 common channel signaling system, and said gateway contains point code.

222. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a relay signaling point of No. 7 common channel signaling system, and said IP transfer network exchanges said public switched telephone network for a telephone number via said gateway.

223. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a relay signaling point of No. 7 common channel signaling system, and said IP transfer network manages a communication record to said public switched telephone network by using a circuit identification code.

224. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a relay signaling point of No. 7 common channel signaling system, and said IP transfer network exchanges a connected public switched telephone network for an account information.

225. (New) An IP communication system according to Claim 186, wherein said IP transfer network connects to one or more public switched telephone network via a gateway which is a

relay signaling point of No. 7 common channel signaling system, and an exchange of said public switched telephone network discriminates said gateway connected to said IP transfer network with a.point code.

226. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal connection-control via a wireless transmitting/receiving portion connected to said network node apparatus via a gateway.

227. (New) An IP communication system according to Claim 226, wherein a wireless transmitting/receiving portion transmits/receives an IP packet including a call control data of a wireless type.

228. (New) An IP communication system according to Claim 226, wherein a wireless transmitting/receiving portion transmits/receives an IP packet including a voice data of a wireless type.

229. (New) An IP communication system according to Claim 226, wherein a wireless transmitting/receiving portion transmits/receives an IP packet including a multi media data of a wireless type.

230. (New) An IP communication system according to Claim 226, wherein a terminal transmits/receives an external IP packet including a call control data of No. 7 common channel signaling system via said media router and said network node apparatus based on a terminal-to-terminal communication connection control method of a server in said IP transfer network and said No.7 common channel signaling system.

231. (New) An IP communication system according to Claim 226, wherein a terminal transmits/receives an external IP packet including a call control data of UNI system via said-

media router and said network node apparatus based on a terminal -to-terminal communication connection control method of a server in said IP transfer network and said UNI system.

232. (New) An IP communication system according to Claim 226, wherein a terminal transmits/receives an external IP packet including a call,control data of SIP system via said media router and said network node apparatus based on a terminal-to-terminal communication connection control method of a server in said IP transfer network and said SIP system.

233. (New) An IP communication system according.to Claim 226, wherein a telephone number is used as an discrimination number of a terminal.

234. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal communication connection control to transmits/receives a multi media data for said network node apparatus via a wireless transmitting/receiving portion which is connected via a gateway.

235. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal communication connection control to transmits/receives a digitalized voice data for said network node apparatus via a wireless transmitting/receiving portion which is connected via a gateway.

236. (New) An IP communication system according to Claim 186, wherein said IP transfer network carries out a terminal-to-terminal communication connection control to transmits /receives a call control data for said network node apparatus via a wireless transmitting/ receiving portion which is connected via a gateway.

237. (New) An IP communication system according to Claim 186, wherein said IP transfer network discards an applicable IP packet when an origin IP address is not registered at an address

management table in said network node apparatus.

238. (New) An IP communication system according to Claim 186, wherein said server has a circuit identification code including at least an origin telephone number, a destination telephone number and a circuit identification code, and said IP transfer network contains one or more server to register said origin telephone number, said destination telephone number and said circuit identification code.

239. (New) An IP communication system according to Claim 186, wherein said IP communication system carries out a management of originating line numbers.

240. (New) An IP communication system according to Claim 186, wherein said IP communication system carries out an account management.

241. (New) An IP communication system according to Claim 186, wherein said IP communication system carries out a management of a communication record for respective telephone numbers.

242. (New) An IP communication system according to Claim 186, wherein said IP transfer network is divided into a first communication line to transmit /receive an internal IP packet including a call control data and a second communication line to transmit/receive an internal IP packet including a digitalized voice.

243. (New) A gateway, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an IP internal packet by encapsulating an IP external packet and a function

to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting /receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and wherein said gateway is connected to said IP transfer network and one or more public switched telephone network, and said gateway contains a relay control apparatus to carry out a communication connection control under a same rule to said, public switched telephone network.

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244. (New) A gateway, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an IP internal packet by encapsulating an IP external packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/ receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling

system; and

wherein said gateway is connected to said IP transfer network and one or more public switched telephone network, and said gateway contains one or more NNI interface.

245. (New) A gateway according to Claim 243, wherein said gateway exchanges said public switched telephone network for signaling information.

246. (New) A gateway according to Claim 243, wherein said gateway includes a point code of said public switched telephone network.

247. (New) A gateway according to Claim 243, wherein a relay control portion exchanges said public switched telephone network for a telephone number.

248. (New) A gateway according to Claim 243, wherein a relay control portion exchanges said public switched telephone network for a circuit identification code.

249. (New) A gateway, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an IP internal packet by encapsulating an IP external packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/ receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet

including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and

wherein said gateway includes a voice control portion to carry out a communication connection control under a same rule to said public switched telephone network, and said voice control portion exchanges said public switched telephone network for a voice.

250. (New) A gateway, which is used in an IP communication system wherein; an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7.common channel signaling system; and wherein said gateway is connected to said IP transfer network and one or more public switched telephone network, and an exchange of said public switched telephone network discriminates a gateway connected to said IP transfer network by using a point code.

251. (New) A gateway according to Claim 243, wherein said gateway includes an IP address.

252. (New) A server, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said.network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate. with said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said. destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/ receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and wherein said servers include a correspondence table of telephone numbers and IP addresses for converting into an address of IP packet based on a telephone number.

253. (New) A server, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media.router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal

IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and

wherein said servers collect and register a terminal-to-terminal communication record including telephone numbers and communication times when said IP transfer network carries out said terminal-to-terminal communication control.

254. (New) A server, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting /receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and

wherein said servers collect and register a terminal-to-terminal communication record including host names of said terminals when said IP transfer network carries out said terminal-to-terminal communication control.

255. (New) A network node apparatus, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting /receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and

wherein said network node apparatus includes a address management table when said IP transfer network carries out said terminal-to-terminal communication control.

256. (New) A network node apparatus according to Claim 255, wherein origin IP addresses are registered at said address management table.

257. (New) A network node apparatus, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more

terminal and communicate with. said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communi cation connection control method of the No.7 common channel signaling system; and

wherein said network node apparatus separates an external IP packet into a.first internal packet including a call control data and a second internal IP packet including digital voice data and communicates by using separated communication lines.

258. (New) A media router, which i s used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said net-work node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/ receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and

wherein said media router transmits/receives a call setting IP packet including at least an

origin telephone number and a destination telephone number.

259. (New) A media router according to Claim 258, wherein said call setting IP packet includes a call, control data which communicates with said connection server.

260. (New) A media router according to Claim 258, wherein said call setting IP packet includes a digitalized voice data which communicates with said IP transfer-network.

261. (New) A media router, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore sa.id external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/ receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP-packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting /receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and

wherein said media router obtains an IP packet by inquiring to said IP transfer network, forms a communication call setting IP packet by using said obtained IP packer and starts a communication connection phase by transmits said IP packet to said IP transfer network.

262. (New) A terminal, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and, a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/ receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said,internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/ receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No.7 common channel signaling system; and

wherein said terminal transmits/receives an IP packet including a call control data with a server in said IP transfer network via a media router and a network node apparatus.

263. (New) A terminal according to Claim 262, wherein said IP packet includes a digital media.

264. (New) A terminal according to Claim 263, wherein said digital media includes digitalized voice and/or animation.

265. (New) A terminal according to Claim 262, wherein said terminal has a telephone number being terminal identification number or an IP packet being terminal address.

266. (New) A terminal according to,Claim 263, wherein said digital media includes at least characters, digitalized still images, digitalized animations, digitalized voice and digital data.

267. (New) A terminal, which is used in an IP communication system wherein;

an IP transfer network contains two or more network node apparatus and servers; said network node apparatus and servers connect to a destination network node apparatus and a destination server via a line in said IP transfer network; said network node apparatus include a function to form an internal IP packet by encapsulating an external IP packet and a function to restore said external IP packet by decapsulating said internal IP packet; said network node apparatus connect to one or more media router; said media router connects to one or more terminal and communicate with said network node apparatus by transmitting/receiving said external IP packet; said network node apparatus and said servers communicate with said destination network node apparatus and destination server by transmitting/receiving said internal IP packet in said IP transfer network; and said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet including call control data of No. 7 common channel signaling system based on a terminal-to-terminal communication connection control method of the No. 7 common channel signaling system; and

wherein said terminal transmits an IP packet including a destination telephone number to said IP transfer network, said IP transfer network converts said IP packet into a destination IP address corresponding to said destination telephone number, and said terminal transmits said IP packet including said destination IP address to said terminal.

268. (New) An IP communication system, wherein:

an IP transfer network contains three or more network node apparatus;

said network node apparatus include a function to form an internal IP packet by encapsulating an IP external packet and a function to restore said external IP packet by decapsulating said internal IP packet;

said network node apparatus connect to two or more destination network node apparatuses through a line via a router having multicast path table;

said network node apparatus connects to one or more media router outside of said IP

transfer network;

said network node apparatus connects to one or more terminal;

said media router connects to one or more terminal;

said media router communicates with said network node apparatus by transmitting /receiving said external IP packet;

said network node apparatus communicates with a destination network node apparatus by transmitting/ receiving said internal IP packet within said IP transfer network; and

said IP transfer network carries out a terminal-to-terminal communication connection control by transmitting/receiving said internal IP packet under a multicast communication control method.

269. (New) An IP communication system according to Claim 268, wherein said network node apparatus discards an applicable IP packet when an origin IP address of said external IP packet of a multicast transmitter is not registered at an address management table of said network node apparatus.

270. (New) An IP communication system according to Claim 268, wherein said IP transfer network transmits/receives said internal IP packet including a multimedia data and carries out a terminal-to-terminal communication connection control.

271. (New) An IP communication system according to Claim 268, wherein said IP transfer network has a tree structure server for forming a multicast tree.

272. (New) An IP communication system according to Claim 271, wherein said tree structure server transfers a path table adding information to a table management server.

273. (New) An IP communication system according to Claim 268, wherein said network node apparatus discards an applicable IP packet when a destination IP address of said external IP

packet of a multicast transmitter is not registered at an address management table of said network node apparatus.

274. (New) An IP communication system according to Claim 268, wherein said IP transfer network carries out an electronic newspaper delivery service by transmitting/receiving said internal IP packet including an electronic paper as digital information.

275. (New) An IP communication system according to Claim 268, wherein said IP transfer network carries out a voice broadcast service by transmitting/receiving said internal IP packet including voice as digital information.

276. (New) An IP communication system according to Claim 268, wherein said IP transfer network carries out a TV broadcast service by transmitting/receiving said internal IP packet including voice and animation as digital information.

277. (New) An IP communication system according to Claim 268, wherein said IP transfer network transmits/receives said IP packet including voice, image or animation to said network apparatus via a wireless transmitting/receiving portion connected by gateways and carries out a terminal-to-terminal communication connection control, and said IP transfer network carries out a multimedia service.

278. (New) An IP communication system according to Claim 268, wherein said terminal has a telephone number being terminal identification number or an IP packet being terminal address.

279. (New) An IP communication system, wherein:

an IP transfer network contains two or more network node apparatuses and servers;

said network node apparatus include a function to form an internal IP packet by encapsulating an IP external packet and a function to restore said external IP packet by

decapsulating said internal IP packet;

said network node apparatus and said servers are connected within IP transfer network via a line;

said network node apparatus is connected to one or more media router;

said media router connects to one or more terminal;

said media router connects to one or more terminal;

said media router communicates with said network node apparatus by transmitting/receiving said external IP packet;

said network node apparatus and servers communicate with a destination network node apparatus and a destination server by transmitting/receiving said internal IP packet within said IP transfer network; and

said IP communication system includes one or more said IP transfer network and constitutes an integrated IP communication system.

280. (New) An IP communication system according to Claim 279, wherein integrated IP communication system includes an IP transfer network to carry out a telephone communication.

281. (New) An IP communication system according to Claim 279, wherein integrated IP communication system includes an IP transfer network to carry out an IP data multicast communication

282. (New) An IP data multicast operation management server in used in said IP communication system according to Claim 279, wherein said IP data multicast operation management server manages IP multicast communication data of a terminal host name and so on of an IP data multicast network.

283. (New) An IP base TV broadcast operation service management server in used in said IP communication system according to Claim 279, wherein said IP base TV broadcast operation

service management server manages IP base TV communication data of a terminal host name and so on of an IP base TV broadcast network.

284. (New) An IP communication system according to Claim 279, wherein said network node apparatus connects to two or more IP transfer network.

285. (New) A communication method of terminal carried out in said IP communication system according to Claim 186, wherein said terminal transmits an IP packet including a destination telephone number to said IP transfer network, said IP transfer network converts said IP packet into a destination IP address corresponding to said destination telephone number and transmits an IP packet including a corresponding IP address, and said terminal receives a transmitted IP packet.